

surface **120** so as to produce a linear magnetic field generator. In this case, since the magnetic fields could be created over long distances, very little current would be needed from the solar harvesting materials. Even weak current flow creates magnetic fields of sufficient strength. Further, since magnetic fields are unaffected by ice, snow, dirt and so forth, keeping the surface clean and well maintained is of less importance. According to an exemplary embodiment of the present invention a vehicle passes over the solar energy harvesting strip **110** to power the vehicle. The vehicle receives power by having an inductive coupling device affixed thereto that passes through the magnetic field thereby producing electrical flow.

#### First Exemplary Embodiment of the Solar Energy Harvesting Strip:

**[0056]** A first exemplary embodiment of the solar energy harvesting strip **110** in elemental form is illustrated in detail in FIG. 2. The solar energy harvesting strip **110** comprises a multiple layer solar energy harvesting composition comprised of a bonding layer **210**, magnetic layer **220**, a thermal harvesting layer **230**, a conductive layer **240**, a photonic harvesting layer **250**, and a sealing layer **260**. These components are shown and arranged as one example, and in other embodiments of the present invention, components can be combined, added, removed and/or rearranged as required by the application or location. Further, all of the layers may be formed having the same width or the layers may be formed such that each layer positioned on top of another layer is narrower than the layer beneath it. Still further, the edged of any of the layers may be squared, rounded, or tapered. In FIG. 2, the energy harvesting composition is embodied as a strip, but may be formed in any configuration as required by the application or location.

**[0057]** In operation, the thermal harvesting layer **230** and/or photonic harvesting layer **250** convert thermal and/or photonic energy into electrical energy. The electrical energy migrates across and/or between the layers of the energy harvesting composition. In one embodiment, the electrical energy migrates along conductive traces on any of the layers and/or conductive ladders between any of the layers. In another embodiment, electrical energy flows through and between the layers of the energy harvesting composition without any conductive traces or ladders.

**[0058]** When a conductive layer **240** is included, the electrical energy migrates to the conductive layer **240** under the influence of a magnetic field generated by the magnetic layer **220** and/or bonding layer **210**. Conductive layer **240** stores the electrical energy and generates an electric field which augments the magnetic field. Further, conductive layer **240** may be attached to an electrical energy consumption, transmission and/or storage device. When the energy harvesting composition is embodied as a strip and conductive layer **240** is attached to an electrical energy consumption, transmission and/or storage device, one or more attachments may occur along the strip.

**[0059]** When a conductive layer **240** is not included, electrical flow occurs within and/or between the layers and generates an electric field which augments the magnetic field. With or without conductive layer **240**, the augmented magnetic field couples the energy harvested by the thermal harvesting layer **230** and/or photonic harvesting layer **250** to an electric vehicle and/or other remote devices. In another embodiment, the electrical energy is used to energize inductive coils that are used to couple the energy harvested by the

thermal harvesting layer **230** and/or photonic harvesting layer **250** to an electric vehicle and/or other remote devices. A better understanding of the first exemplary embodiment of the solar energy harvesting strip **110** will be achieved through the following detailed discussion.

**[0060]** Bonding layer **210** is preferably comprised of a rubber or asphalt type adhesive and functions as a bonding agent between a surface on which the solar energy harvesting strip is applied and a subsequent layer. Further, the bonding layer **210** may additionally function to fill any cracks and/or fissures in the surface it is applied to, such as driving surface **120**. In an exemplary embodiment of the present invention, bonding layer **210** comprises a soft ferromagnetic material suspended in a rubberized material. When bonding layer **210** comprises the soft ferromagnetic material, the bonding layer **210** additionally functions to generate a magnetic field that becomes magnetized by magnetic layer **220**. Further, bonding layer **210** may function to electrically insulate the other layers from the surface it is applied to. Exemplary soft ferromagnetic materials include iron, soft iron, steel and magnetite. However, any magnetic material may be used.

**[0061]** Magnetic layer **220** is comprised of a permanent magnetic material. The magnetic layer **220** has a magnetic field that is perpendicular to the field in place, such as the field generated by the bonding layer **210** when the bonding layer **210** includes a soft ferromagnetic material. Magnetic layer **220** functions to generate a magnetic field, which will be described in greater detail below. The permanent magnetic material of magnetic layer **220** may be a permanent hard ferromagnetic material. Exemplary hard ferromagnetic materials include strontium ferrite, strontium ferrite powder, strontium ferrite powder in a polymer base, steel, iron, nickel, cobalt, suspensions of magnetite, soft iron in epoxy, iron nickel alloy, ceramic, alnico, and rare earth magnetic materials. However, any permanent magnetic material may be used.

**[0062]** Thermal harvesting layer **230** is comprised of a thermal electric and/or thermionic material. The thermal harvesting layer **230** converts thermal energy into electrical energy. It is not necessary for the thermal energy to originate as solar energy. Thermal harvesting layer **230** may be combined with one or both of the bonding layer **210** and magnetic layer **220**. Exemplary thermal electric and/or thermionic materials include strontium and barium strontium titanates. Barium strontium titanates is a material that when heated causes electrical current to flow. Beside the above exemplary thermal electric and/or thermionic materials, any thermal electric and/or thermionic materials may be used.

**[0063]** Conductive layer **240** is comprised of at least two conductors separated by a dielectric or insulative material. The conductors collect the electrical energy from the thermal harvesting layer **230** and the photonic harvesting layer **250**. When used with a dielectric, the conductors form a parallel plate discharge capacitor. One of the conductors functions as a positively charged plate whereas the other functions as a negatively charged plate. Preferably, if thermal harvesting layer **230** is comprised of a thermionic material and is positioned adjacent to conductive layer **240**, the conductor closest to the thermal harvesting layer **230** may function as the positively charged plate. Exemplary materials for the conductors include aluminum oxide, aluminum dioxide, indium tin oxide, indium tin oxide laced with graphite, any conducting metal, and thin film mono pole plastics such as a polyamide. Additionally, the conductor may be comprised of carbon modified epoxies or silicate modified cryoacrylates, which